

Claim 1 has been amended to indicate that the polyurethane elastomer comprises water or at least one low molecular weight chain-lengthening and/or crosslinking agent having at least two hydroxyl groups and an average molecular weight of from 60 to 800. Support for this amendment is found on page 3, lines 22-31, as well as on page 4, lines 1-2, of the Application.

Applicants have attached, as Enclosure #1, an English translation of Windemuth et al. for the Examiner's use.

REMARKS

Summary of the Invention:

Applicants' claimed invention is directed to a polyurethane elastomer prepared from a composition comprising at least one higher molecular weight polyhydroxyl compound, 2,3,5,6-tetramethyl-1,4-diisocyanatobenzene and at least one low molecular weight chain-lengthening and/or crosslinking agent. The polyurethane cast elastomers prepared from this composition have increased color stability, high-quality mechanical properties, and are inexpensive to prepare. Additionally, prepolymers prepared from Applicants' claimed composition have high storage stability, resulting in longer, user-friendly processing time.

The Patent Office rejected Claim 1 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Additionally, the Patent Office rejected Claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over DE 955,094 ("Windemuth et al."), in view of *Saunders* and *Frisch*. These rejections are respectfully traversed.

Rejection of Claim 1 under 35 U.S.C. § 112, second paragraph:

The Patent Office rejected Claim 1 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. The Patent Office believes that Claim 1 is confusing because it is not understood how a chain extender having two hydroxyl groups can have a molecular weight of 18.

Applicants have amended Claim 1 to indicate that the polyurethane elastomer comprises water or at least one low molecular weight chain-lengthening and/or crosslinking agent having at least two hydroxyl groups and an average molecular weight of from 60 to 800. Support for this amendment is found on page 3, lines 22-31, as well as on page 4, lines 1-2, of the Application.

Amended Claim 1 is definite and distinctly claims the subject matter which Applicants regard as their invention. Thus, Applicants respectfully request that the Patent Office withdraw its rejection of Claim 1 under 35 U.S.C. § 112, second paragraph, and enter allowance of this Claim.

Rejection of Claims 1-4 under 35 U.S.C. § 103(a):

The Patent Office rejected Claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Windemuth et al. in view of Saunders and Frisch. The Patent Office believes that Windemuth et al. disclose, in Example 2, an elastomeric coating made by chain extending a polyisocyanate prepolymer with water and ethylene diamine. The Patent Office concedes that this reference is different from Applicants' claimed invention in that a chain extender with a material having at least two hydroxyl groups is not disclosed in the reference. The Patent Office also concedes that this reference is different from Applicants' claimed invention in that the chain extender of Windemuth et al. is included in the prepolymer step.

The Patent Office believes that it would have been obvious to one of ordinary skill in the art to chain extend with polyols because Windemuth et al. teach their equivalence to water and polyamines. It is also the Patent Office's position that it would have been obvious to one of ordinary skill in the art to use the elastomers of Windemuth et al. for shaped articles because Saunders and Frisch teach that cast elastomers can be used for both coatings and shaped articles. Finally, the Patent Office believes that it would have been obvious to make the elastomers of Windemuth et al. by a one-shot method because Saunders and Frisch teach that both methods can be used, and that the one-shot method would save time by eliminating an extra step.

Prior art is only relevant to the obviousness inquiry if it is analogous. In re Paulsen, 31 U.S.P.Q.2d 1671, 1676 (Fed. Cir. 1994). Two criteria are relevant in

determining whether or not prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed; and (2) if the art is not within the same field of endeavor, whether it is still reasonably pertinent to the particular problem to be solved. Wang Laboratories Inc. v. Toshiba Corp., 26 U.S.P.Q.2d 1767, 1773 (Fed. Cir. 1993) It is respectfully submitted that Windemuth et al. is not analogous art because Windemuth et al. is not from the same field of endeavor as Applicants' claimed invention. Additionally, Windemuth et al. is not analogous art because Windemuth et al. is not reasonably pertinent to the particular problem to be solved by Applicants' claimed invention.

Windemuth et al. is not pertinent art to Applicants' claimed invention because the invention disclosed in that reference is not from the same field of endeavor as Applicants' claimed invention. Windemuth et al. may indeed disclose a polyurethane made from a reaction mixture that includes a chain lengthening or cross-linking agent. However, Windemuth et al. certainly do not disclose a polyurethane elastomer made from a polyurethane wherein the polyurethane chain has been extended by a chain extender.

Windemuth et al. disclose, in Example 2, a polyester which is obtained from adipinic acid and diethylene glycol brought to conversion with tetramethyl-p-phenylene diisocyanate. The diethylene glycol chain extender in Example 2 of Windemuth et al. is used to prepare the polyester, not to chain extend the polyurethane. Applicants' claimed invention, on the other hand, discloses adding a chain extender, such as, for example, 1,4-butanediol, for lengthening the polyurethane chain. See the Application, page 8, lines 10-11.

While Windemuth et al. simply disclose chain extenders for the purpose of converting polyesters, Applicants disclose the use of chain extenders for the purpose of extending polyurethane chains for obtaining certain desired mechanical properties for polyurethane elastomers. See the Application, page 4, lines 4-7. Clearly, Applicants' claimed invention and Windemuth et al.'s invention are not in the same field of endeavor.

Windemuth et al. is also not pertinent art to Applicants' claimed invention because it is not reasonably pertinent to the particular problem to be solved by

Applicants' claimed invention. Windemuth et al. are involved with the problem of producing surface images from organic compounds which are highly resistant to light. Applicants, on the other hand, are involved with the problem of improving the mechanical properties of elastomers.

Since the Windemuth et al. reference is neither analogous art nor reasonably pertinent to the particular problem to be solved by Applicants' claimed invention, Windemuth et al. cannot be cited as prior art to Applicants' claimed invention. As a result, Windemuth et al. cannot be used to render Claims 1-4 of Applicants' claimed invention obvious. Applicants, therefore, respectfully request that the Patent Office withdraw its rejection of Claim 1-4 under 35 U.S.C. § 103(a).

Even assuming, *arguendo*, that Windemuth et al. is relevant art to Applicants' claimed invention, Applicants' invention is nonetheless patentable over Windemuth et al. in view of *Saunders* and *Frisch* because there is no motivation to modify the polyurethane disclosed in Windemuth et al. with a chain extender, as disclosed by Applicants' claimed invention.

In order to support a rejection based on obviousness, the prior art must provide a motivation or reason for the worker in the art, without the benefit of the Applicants' specification, to make the necessary changes in the reference invention. See Ex parte Chicago Rawhide Manufacturing Co., 226 U.S.P.Q. 438 (PTO Bd. App. 1984).

Windemuth et al. disclose chain extenders for the purpose of converting polyesters. See Windemuth et al., Example 2, page 3, column 1. Applicants disclose chain extenders for the purpose of extending polyurethane chains to obtain certain mechanical properties for polyurethane elastomers. See the Application, page 4, lines 4-7.

One having ordinary skill in the art would have had no motivation to choose the chain extenders of Windemuth et al. and use them to extend polyurethane chains to produce Applicants' claimed polyurethane elastomer with improved mechanical properties. Applicants submit that only **after** reading their specification do the necessary "selections" become "obvious". Such hindsight construction of the

teachings of a reference do not, however, provide a proper basis for a rejection under 35 U.S.C. § 103.

The fact that the Examiner is able to select the Windemuth et al. reference from the many prior art disclosures directed to the same type of problem addressed by Applicants' claimed invention because the reference includes features which can be combined with the polyurethane elastomer of Applicants' claimed invention to "arrive at" a polyurethane elastomer which the Examiner maintains corresponds to the claimed invention **does not** establish a proper *prima facie* case of obviousness. There must be some motivation for selecting and combining the particular references being relied upon by the Examiner. In re Fritch, 23 USPQ2d 1780 (CAFC 1992); Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Int. 1993).

Given the foregoing, Applicants contend that their claimed invention is patentable over Windemuth et al. in view of *Saunders* and *Frisch*. Thus, Applicants respectfully request that the Patent Office withdraw its rejection under 35 U.S.C. § 103(a) that Claims 1-4 are unpatentable over Windemuth et al. in view of *Saunders* and *Frisch* and enter allowance of these Claims.

CONCLUSION

For the foregoing reasons, Applicants respectfully request: that the amendment to Claim 1 be entered; that the rejection of Claim 1 under 35 U.S.C. § 112, second paragraph, be withdrawn; that the rejection of Claims 1-4 under 35 U.S.C. § 103(a) be withdrawn; and that pending Claims 1-4 be allowed to issue as a U.S. patent.

Respectfully submitted,

By



Carolyn M. Sloane
Agent for Applicants
Reg. No. 44,339

Bayer Corporation
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
(412) 777-8367
FACSIMILE PHONE NUMBER:
(412) 777-8363
s:/sr/cms0045

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claim 1 has been amended as follows:

1. (Amended) A polyurethane elastomer prepared from a composition comprising:

- a) at least one higher molecular weight polyhydroxyl compound having an average molecular weight of from 500 to 6,000 and a functionality of at least 2[,];
- b) 2,3,5,6-tetramethyl-1,4-diisocyanatobenzene; and
- c) water or at least one low molecular weight chain-lengthening and/or crosslinking agent having at least two hydroxyl groups and an average molecular weight of from [18] 60 to 800.

marked up claims



ENCLOSURE #1